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Last month's meeting was held at **Paul Pierce's** extinct computer museum in Portland. I actually think it will be called the vintage computer museum when it becomes available to the public. In any case, thanks Paul for sharing your collection with the club. Like many other club members mentioned, I believe it is the most comprehensive collection I've ever witnessed. Good luck with your demanding project.

The **March Meeting** is scheduled to be on the 13th, 1pm at **Sam M. Mesher Tool Co** located at **1704 NW Johnson** in Portland. In NW Portland, avenues are numbered and streets are alphabetical so addresses are easy to find. It is located a few blocks west of I-405 so take the Everett street exit (if northbound) or the Burnside exit (if southbound) then snake your way to Meshers.

Also, you may be interested in attending the **Northwest Robotics Competition** held in the coliseum at about the time you receive this. See details elsewhere in this Newsletter.

April 10 Meeting (tentative)**:** Another Time Clock repair. 18347 S. Redlands Rd., Oregon City, OR. This firm has old machinery which will interest our members.

For the Beginner #13

CUTTING FLUIDS

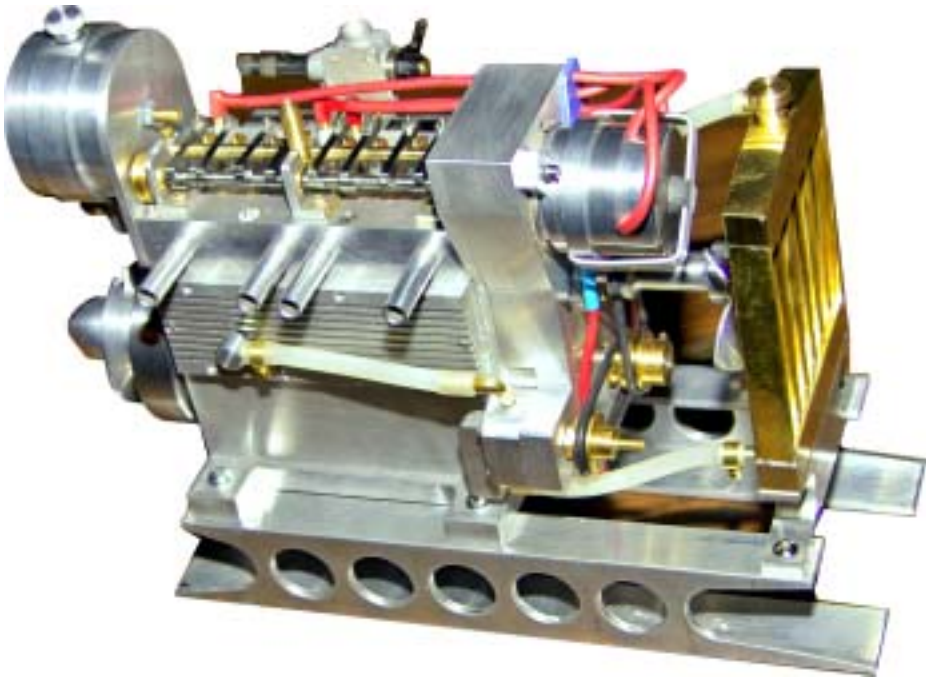
When metals were first cut on machines, cutting fluids have been used. Cutting fluids in the form of animal fats were first used to reduce friction and cool the work piece. These straight fatty oils tended to become rancid, had a disagreeable odor, and often caused skin rashes. Although lard oil is not used much anymore, it is still used as an additive in some cutting oils. Water alone is corrosive and tends to rust machine parts and work pieces. Water is now combined with oil in an emulsion that cools but does not corrode. Many new chemical and petroleum-based cutting fluids are in use today, making possible the high rate of production in machining and manufacturing of metal products we presently enjoy. The reasons for this are that cutting fluids reduce machining time by allowing higher cutting speeds and that they reduce tool breakage and down time.

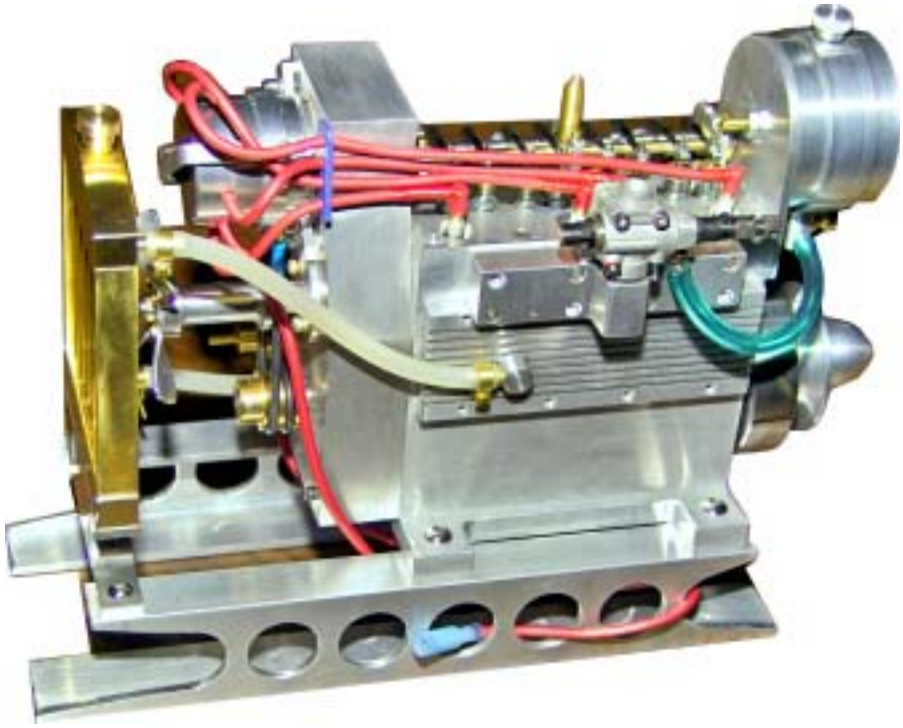
(Correction for last time: 1/2 D+1/2C = offset. Where 'D'= Diameter and 'C' = cutter)

Wes Ramsey

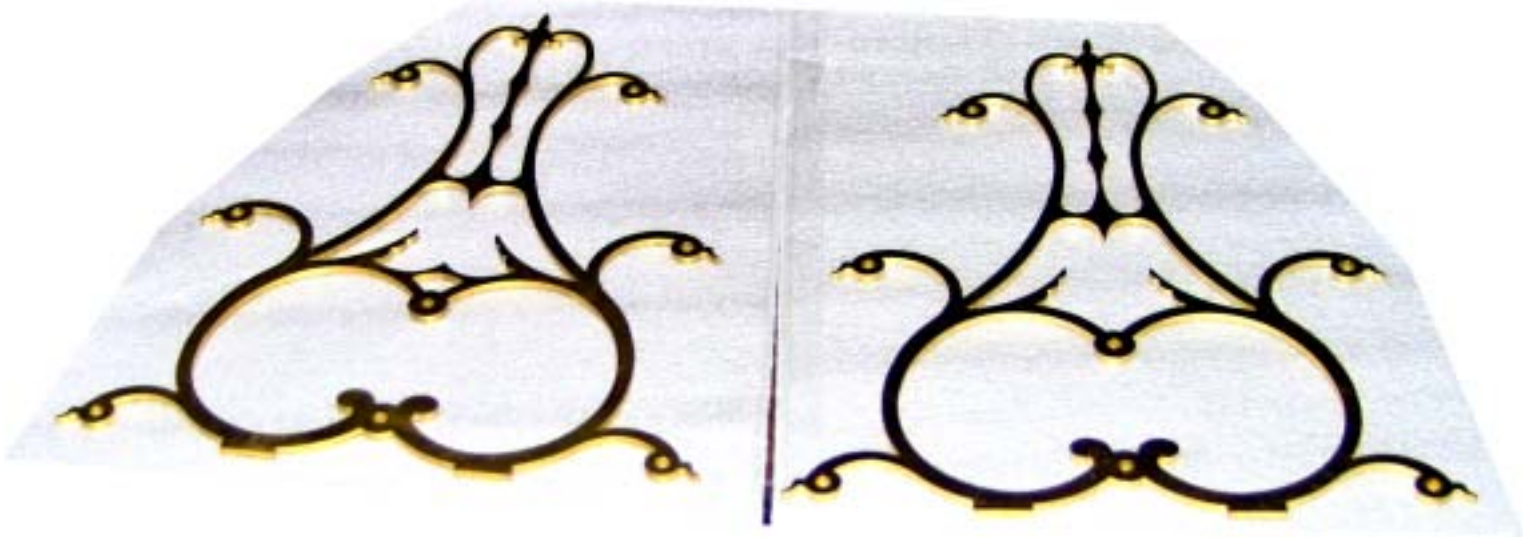
For Sale by Bruce Reichelt 503.642.5214 or bruce_reichelt@hotmail.com:
Lathe: Clausing 12 x 36 with quick change gears. Includes 6" 3 jaw Cushman and 10" 4 jaw chucks, steady rest, collet closer, 1/2" Jacobs chuck and live center. $1875. Collets and quick change toolholder may also be available.
Bridgeport milling machine: Step pulley model(1J) with 42" table including power feed, includes Bridgeport vise and collet set, $2300.

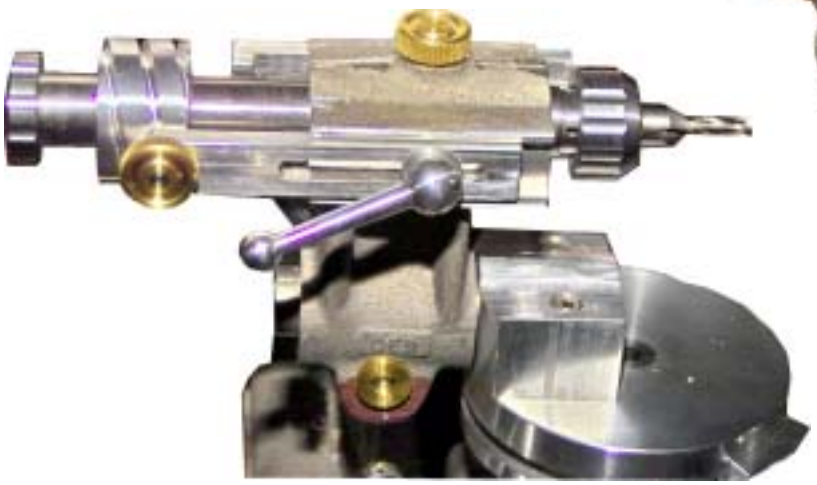
This note from Wes Ramsey: Spring Small Engines class starts just after spring break. This is just in time to get your mower going. Mount Hood CC, Spring Sesson. Sign up now.





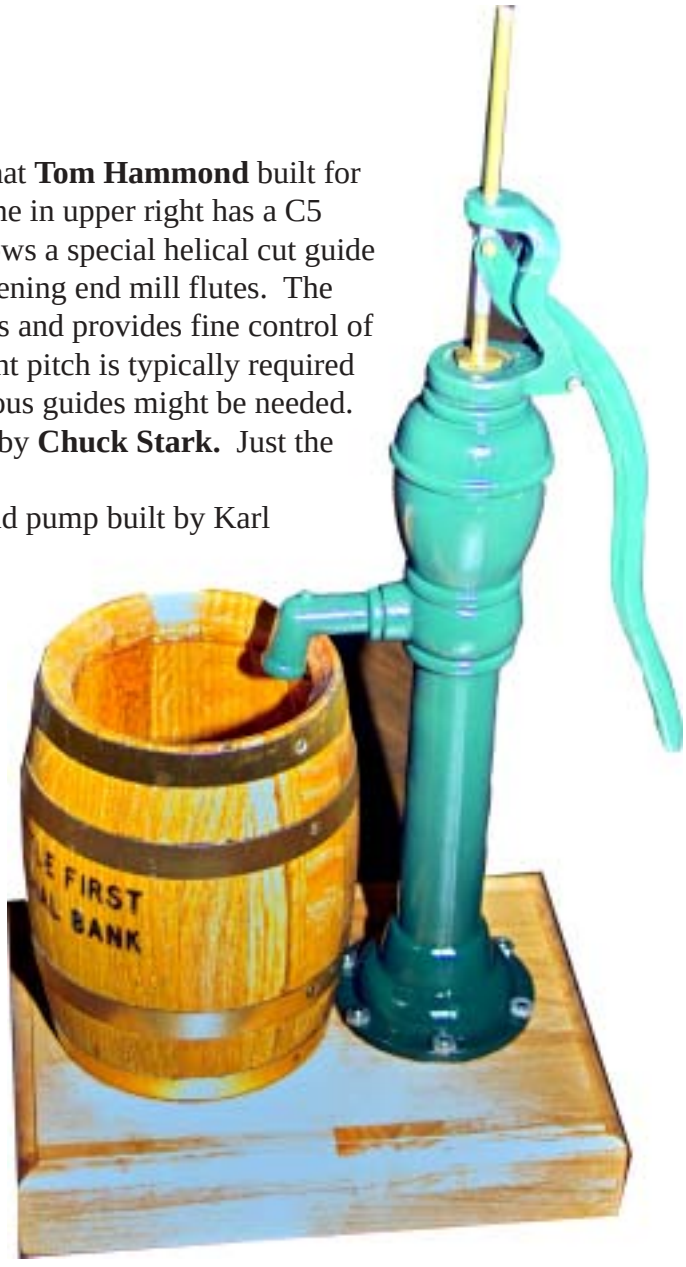
Wow. Just look at these projects. **Henry Casson** brought his clock harps (below) machined on his CNC mill. Such detail requires a very small mill and very fast speeds and Henry had both. Henry also brought the cut off tool holder and tool post (above) that he machined to fit his Myford lathe. Henry has been busy. **Bob Eaton** has also been busy as witnessed by his 4 cylinder in-line gas powered water cooled engine of his own design (at right). If *SIC* magazine was in production this would surely be a cover entry. Congratulations Henry and Bob for your extraordinary work.

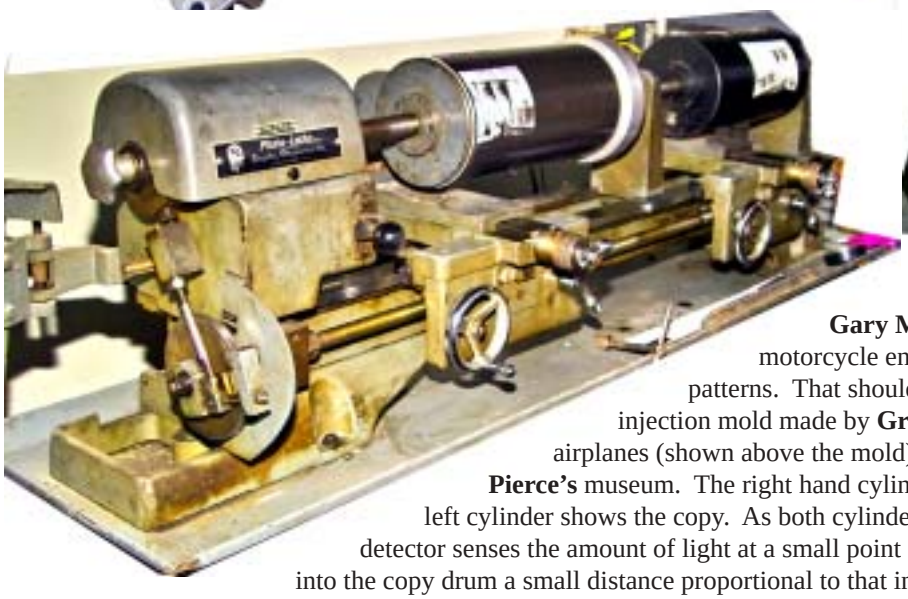




Above are close ups of the workholders that **Tom Hammond** built for Gary Martin's light weight Quorn. The one in upper right has a C5 tapered spindle. The workhead above shows a special helical cut guide (near the left end of the spindle) for sharpening end mill flutes. The pitch of the helix matches that of the flutes and provides fine control of flute sharpening. Unfortunately, a different pitch is typically required for different diameter end mills so numerous guides might be needed. At left is a PM Research boiler displayed by **Chuck Stark.** Just the right size for many of our projects.

At right is a model working hand pump built by Karl Smith. I hope someone will make casting kits of this project available to others. Hmmmm.





Gary Martin brought the castings for the Henderson motorcycle engine (upper left) for which he has agreed to make patterns. That should keep him busy for awhile. Above is a plastic injection mold made by **Grant Carsen** that produces a small stand for small airplanes (shown above the mold). At left is a photo duplicating machine in **Paul Pierce's** museum. The right hand cylinder has the original picture to be duplicated while the left cylinder shows the copy. As both cylinders are spinning at the same speed, a sensitive light detector senses the amount of light at a small point on the original cylinder. A cutting bit is then moved into the copy drum a small distance proportional to that intensity. The bit removes a smaller or larger amount of the black covering which exposes a white layer. I'll bet your lathe can't do this. Meanwhile (below) **Pat Wicker**, club president, hosts the auction for items brought and bought by club members.

FIRST Robotics Competition
Pacific Northwest Regional
Public Agenda
March 4-6, 2004

Thursday, March 4, 2004

7:45AM	3 Team Reps to uncrate
8:30AM	Pits and Machine Shop open
8:30AM-12:00PM	Registration and inspection
11:00AM-6:00PM	Practice rounds
8:00PM	Pits and Machine Shop close

Friday, March 5, 2004

8:00AM	Pits and Machine Shop open
9:00AM	Opening ceremonies
9:20AM-4:30PM	Seeding matches
12:00PM-1:00PM	Lunch
4:30PM	Awards ceremony
6:00PM	Pits and Machine Shop close

Saturday, March 6, 2004

8:00AM	Pits and machine shop open
9:00AM	Opening ceremonies
9:30AM-11:45AM	Seeding matches
11:45AM-12:00PM	Alliance Selections
12:00PM-1:00PM	Lunch
1:00PM-3:00PM	Final rounds
3:00PM	Awards ceremony
5:00PM	Pits and Machine Shop close, crates packed for shipping

**Schedule subject to change. All times are estimated based on flow of rounds. See Pit Administration table for updated times.